

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
SOIL				
Soil Erosion - Sheet and Rill	Detachment and transport of soil particles caused by rainfall splash and runoff degrade soil quality.	Sheet and rill erosion does not exceed the Soil Loss Tolerance "T".	Sheet and rill erosion does not exceed the Soil Loss Tolerance "T".	<ul style="list-style-type: none"> • Visual assessment (pedestals, rills) & client interview • Utah Revised Universal Soil Loss Equation (RUSLE) Handbook Dec. 1998 • RUSLE DOS Program • Rangeland Health Evaluation Worksheet
Soil Erosion - Wind	Detachment and transport of soil particles caused by wind degrade soil quality and/or damage plants.	Wind erosion does not exceed the Soil Loss Tolerance "T" or, for plant damage, does not exceed Crop Damage Tolerances.	Wind erosion does not exceed the Soil Loss Tolerance "T" or, for plant damage, does not exceed Crop Damage Tolerances.	<ul style="list-style-type: none"> • Visual assessment (pedestals, blow-out areas) & client interview • Utah Wind Erosion Equation (WEQ) Handbook Jan 98 • Utah WEQ Excel Spreadsheet • Rangeland Health Evaluation Worksheet
Soil Erosion - Ephemeral Gully	Small channels caused by surface water runoff degrade soil quality and tend to increase in size. On cropland, they can be obscured by heavy tillage.	Surface water runoff is controlled sufficiently to stabilize the small channels and prevent reoccurrence of new channels.	If ephemeral gully erosion is discernable, vegetative and/or structural practices will be planned to provide control for storm events that are less than a 10-year (24 hour) frequency.	<ul style="list-style-type: none"> • Visual assessment & client interview • Volume calculations • Aerial photo trend analysis • Rangeland Health Evaluation Worksheet

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Soil Erosion - Classic Gully	Deep, permanent channels caused by the convergence of surface runoff degrade soil quality. They enlarge progressively by headcutting and lateral widening.	Surface water runoff is controlled sufficiently to stop progression of headcutting and widening.	Headcutting is stopped, gully sideslopes are stabilized, and no active erosion is occurring in channel bottom. ¹	<ul style="list-style-type: none"> • Visual assessment • Volume calculations • Aerial photo trend analysis • Rangeland Health Evaluation Worksheet
Soil Erosion - Streambank	Accelerated loss of streambank soils restricts land and water use and management.	Accelerated streambank soil loss does not exceed a level commensurate with upstream land use and normal geomorphological processes on site.	Streambanks are stable and not subject to erosion under average flow conditions of the associated stream. ^{2 3}	<ul style="list-style-type: none"> • Visual assessment & client interview • Stream Erosion Condition Inventory (SECI) • Stream Visual Assessment Protocol (SVAP) • Proper Functioning Condition (PFC) • Monitoring transects • Volume calculations • Aerial photo trend analysis • Engineering Field Handbook, Chapter 16
Soil Erosion - Shoreline	Soil is eroded along shorelines by wind and wave action, causing physical damage to vegetation, limiting land use, or creating a safety hazard.	Shoreline erosion is stabilized to a level that does not restrict the use or management of adjacent land, water or structures.	Shoreline erosion is stabilized to a level that does not restrict the use or management of adjacent land, water or structures.	<ul style="list-style-type: none"> • Visual assessment • Aerial photo trend analysis • Volume calculations • Erosion transects/pins

¹ In those cases where the source of the problem is off-site from the management unit being planned, and the land user/owner does not have control of the problem area, and the actions of the land user/owner are not contributing to the problem. The requirements for a RMS may be met even though the resource criteria have not been met.

² Average flow takes into consideration a single storm event of a 10-year, 24-hour frequency and normal spring runoff.

³ In those cases where the source of the problem is upstream from the management unit being planned, and the land user/owner does not have control of the problem area, and the actions of the land user/owner are not contributing to the problem. The requirements for a RMS may be met even though the resource criteria have not been met.

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Soil Erosion – Irrigation-induced	Improper irrigation water application and equipment operation are causing soil erosion that degrades soil quality.	Irrigation-induced erosion does not exceed the Soil Loss Tolerance “T”.	For sprinkler irrigated lands, there shall be no readily discernable irrigation induced erosion. For surface irrigated lands, the length of irrigation run and irrigation inflows will be within established criteria as shown in the Utah Irrigation Guide. Surface irrigation systems include components for disposing of tailwater with no discernable erosion at the downstream end of the field or in the discharge channel.	<ul style="list-style-type: none"> • Visual assessment & client interview • Imhoff Cone • SRFR (Surface Irrigation Model) • Utah Excel Center Pivot and Hand/Wheel line Sprinkler design tools • NRCS Utah Irrigation Guide and National Irrigation Guide
Soil Erosion - Mass Movement	Soil slippage, landslides, or slope failure, normally on hillsides, result in large volumes of soil movement	Shallow slumps, slides, or slips are prevented or minimized so that the mass movement of soil material does not exceed naturally occurring rates.	Conservation practices that may contribute to mass movement, as shown in the CPPE, will be avoided.	<ul style="list-style-type: none"> • Visual assessment & client interview • Aerial photo trend analysis
Soil Erosion – Road, road sides and Construction Sites	Soil loss occurs on areas left unprotected during or after road building and/or construction activities.	Sites are adequately protected from soil loss during and after road building and construction activities.	Roadbanks show no readily discernable erosion and banks are stable. Construction sites are stabilized with vegetation or other materials, as needed, so that no discernable sediments are leaving the site.	<ul style="list-style-type: none"> • Visual assessment • Current water and wind erosion prediction tools (RUSLE2 and WEQ)
Soil Condition - Organic Matter Depletion	Soil organic matter has or will diminish to a level that degrades soil quality.	Soil Conditioning Index is positive.	The Soil Condition Rating Index will reflect a static or positive soil condition on cropland. For rangeland, an improving range trend will be evident.	<ul style="list-style-type: none"> • Soil Conditioning Index • Soil Quality Kit • Soil testing and analysis • Rangeland Health Evaluation Worksheet

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SOIL				
Soil Condition - Compaction	Compressed soil particles and aggregates caused by mechanical compaction adversely affect plant-soil-moisture relationships.	Mechanically compacted soils are renovated sufficiently to restore plant root growth and/or water movement.	There should be no detectable tillage pan or impairment of the growth and vigor of adapted plants. Soil penetrometer readings are less than 200 PSI at 50% of field capacity.	<ul style="list-style-type: none"> Visual assessment of plant root systems Bulk density test-Soil Quality Kit Dial penetrometer Rangeland Health Evaluation Worksheet
Soil Condition - Subsidence	Loss of volume and depth of organic soils due to oxidation caused by above normal microbial activity resulting from excessive drainage or extended drought.	The timing and regime of soil moisture is managed to attain acceptable subsidence rates.	N/A	<ul style="list-style-type: none"> Visual assessment
Soil Condition - Contaminants - Salts and Other Chemicals	Inorganic chemical elements and compounds such as salts, selenium, boron, and heavy metals restrict the desired use of the soil or exceed the soil buffering capacity	Salinity levels cause less than a 10% decrease in plant yield. Other contaminants do not exceed plant tolerances or are below toxic levels for plants or animals.	Conservation practices will be applied that will control soil EC levels and other contaminants to acceptable levels for the intended land use. Applied contaminants do not exceed plant tolerances or are below toxic levels for plants, animals, and humans.	<ul style="list-style-type: none"> Soil test Soil Quality Kit- EC meter EM38 meter EPA/DEQ Guidelines
Soil Condition - Contaminants - Animal Waste and Other Organics	Nutrient levels from applied animal waste and other organics restrict desired use of the land.	Nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results.	There are no observable or measurable detrimental effects on desired adapted plant or animal resources. Where soil test phosphorus levels (Olsen test) exceed 100 ppm, animal manure and other organics will not continue to be applied to the land.	<ul style="list-style-type: none"> Soil test Plant tissue test Application records Yield records/history

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Soil Condition – Contaminants - Commercial Fertilizer	Over application of nutrients degrades plant health and vigor, or exceeds the soil capacity to retain nutrients.	Soil nutrient levels do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained.	Soil nutrient levels do not exceed crop needs based on realistic yield goals.	<ul style="list-style-type: none"> • Soil Test • Utah Fertilizer Guide • Application records • Yield records/history
Soil Condition - Contaminants - Residual Pesticides	Residual pesticides in the soil have an adverse effect on non-target plants and animals.	Pesticides are applied, stored, handled, and disposed of so that residues in the soil do not adversely affect non-target plants and animals.	Pesticides are applied, stored, handled, and disposed of so that residues in the soil do not adversely affect non-target plants and animals.	<ul style="list-style-type: none"> • Visual assessment • WIN-PST • Soil test • Plant and animal tissue test • Farm*A*Syst assessment
Soil Condition - Damage from Soil Deposition	Sediment deposition damages or restricts land use/management or adversely affects ecological processes.	Sediment deposition is sufficiently reduced to maintain desired land use/management and ecological processes.	There are no readily discernable damages to property, crops, or land; and no safety hazards exist, due to soil deposition. The criteria for deposition will be met when the criteria for erosion control is met. ⁴	<ul style="list-style-type: none"> • Visual assessment • Volume calculations • Current water and wind erosion prediction tools (DOS RUSLE and WEQ) coupled with sediment delivery ratios

⁴ In cases where the sources of deposition are not under the control of the landowner, a RMS will include provisions for the removal and/or redirection of depositional materials.

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WATER				
Water Quantity - Excessive Seepage	Subsurface water oozing to the surface restricts land use and management.	Subsurface water is managed to limit periods of saturation that are unfavorable to the present or intended land use. Management complies with wetland policies.	N/A	<ul style="list-style-type: none"> Visual assessment & client interview
Water Quantity - Excessive Runoff, Flooding, or Ponding	The land becomes inundated restricting land use and management.	Excess water amounts and/or rates of flow are controlled consistent with desired present or intended land use goals and wetland policies.	Excess water does not restrict a suitable use of the land; does not restrict operational activities; and does not restrict the rooting depth of desired crops. There are no observable damages to land, crops, or structures resulting from overland flow.	<ul style="list-style-type: none"> Visual assessment & client interview National Engineering Handbook, Part 630 (EFH-Chapter 2 and 3) Hydrologic models, e.g. HEC-RAS, TR-20, TR-55
Water Quantity - Excessive Subsurface Water	Water saturates upper soil layers restricting land use and management.	Subsurface water is managed to limit periods of saturation compatible with the present or intended land use and wetland policies.	Subsurface water is managed to limit periods of saturation compatible with the present or intended land use and wetland policies.	<ul style="list-style-type: none"> Visual assessment of soil cores and coring holes Plant quality and quantity measurements National Engineering Handbook, Part 650 (EFH-Chapter 14)
Water Quantity - Drifted Snow	Wind-blown snow deposits and accumulates around and over surface structures restricting ingress, egress and conveyance of humans and animals.	Snowdrifts are reduced or prevented to allow ingress, egress, and conveyance of humans and animals.	Snowdrifts are reduced or prevented to allow ingress, egress, and conveyance of humans and animals.	<ul style="list-style-type: none"> Visual assessment & client interview Windbreak and Shelterbelt Design Handbook

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WATER				
Water Quantity - Inadequate Outlets	Natural or constructed outlets too small to remove excess water in a timely manner.	Outlets are designed, installed, upgraded or maintained to adequately convey water for present or intended uses.	Outlets are designed, installed, upgraded or maintained to adequately convey water for present or intended uses.	<ul style="list-style-type: none"> • Visual assessment & client interview • National Engineering Handbook, part 650 (EFH – Chapters 2,3,7) • Hydrologic models, e.g. HEC-RAS, TR-20, TR-55
Water Quantity - Inefficient Water Use on Irrigated Land	Limited water supplies are not optimally utilized.	Land and water management is planned and coordinated to provide optimal use of natural and applied moisture.	Land and water management is planned and coordinated to provide optimal use of natural and applied moisture. Seasonal irrigation efficiencies will conform to the guidelines as outlined in the Utah Conservation Practice Standard 449, "Irrigation Water Management".	<ul style="list-style-type: none"> • Visual assessment & client interview • Utah and National Engineering Handbook, Part 652, Irrigation Guide • Crop quality and quantity measurements • Farm Irrigation Rating Index (FIRI)
Water Quantity - Inefficient Water Use on Non-irrigated Land	Natural moisture is not optimally utilized.	Management provides optimum use of natural moisture for the present or intended land use.	Water losses to runoff and evaporation are minimized, and infiltration is maximized, through the use of vegetative, structural and soil management practices as shown in the CPPE.	<ul style="list-style-type: none"> • Visual assessment • Soil moisture tests
Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition	Sediment deposits in ditches, canals, culverts, and other water conveyances reduce the desired flow capacity.	Conveyance structures are upgraded or maintained to adequately convey water for present or intended uses.	Conveyance structures are upgraded or maintained to adequately convey water for present or intended uses.	<ul style="list-style-type: none"> • Visual assessment & client interview • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7) • Hydrologic models, e.g., HEC-RAS, TR-20, TR-55
Water Quantity - Reduced Storage of Water Bodies by Sediment Accumulation	Sediment deposits in water bodies reduce the desired volume capacity.	Water bodies and contributing source areas are treated to allow sufficient water storage for present and intended uses.	Water bodies and contributing source areas are treated to allow sufficient water storage for present and intended uses.	<ul style="list-style-type: none"> • Visual assessment • Depth and area measurements • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7,11)

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WATER				
Water Quantity - Aquifer Overdraft	Water withdrawals exceed recharge rates.	Land and water management are coordinated to conserve aquifer water levels.	Land and water management are coordinated to conserve aquifer water levels.	<ul style="list-style-type: none"> • Water well level measurements • UGS groundwater publications
Water Quantity – Insufficient Flows in Water Courses	Water flows are not consistently available in sufficient quantities to support ecological processes and land use and management.	Authorized uses and management of water are coordinated to minimize the impacts on water course flows.	Authorized uses and management of water are coordinated to minimize the impacts on water course flows.	<ul style="list-style-type: none"> • Visual assessment • Water flow records • Gauge Station data • Consumptive use/allocation water rights
Water Quality - Harmful Levels of Pesticides in Groundwater	Residues resulting from the use of pest control chemicals degrade groundwater quality.	Pesticides are applied, stored, handled, disposed of, and managed so that groundwater uses are not adversely affected.	Pesticides are applied, stored, handled, disposed of, and managed so that groundwater uses are not adversely affected.	<ul style="list-style-type: none"> • WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) • NAPRA (National Agricultural Pesticide Risk Analysis – USDA/NRCS) • Vadose zone and groundwater chemical sampling and assay • Farm Irrigation Rating Index (FIRI)
Water Quality - Excessive Nutrients and Organics in Groundwater	Pollution from natural or human induced nutrients such as N, P, and organics (including animal and other wastes) degrades groundwater quality.	Nutrients and organics are stored, handled, disposed of, and applied such that groundwater uses are not adversely affected.	Nutrients and organics are stored, handled, disposed of, and applied such that groundwater uses are not adversely affected. Technical assistance will be in accordance with standards and specifications for Nutrient Management (590), and Waste Utilization (633). Irrigation water will be managed according to standards for Irrigation Water Management (449) such that groundwater uses are not adversely affected.	<ul style="list-style-type: none"> • National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook • Nitrate Leaching Index • Utah Manure Application Risk Index • Farm*A*Syst • Vadose zone and groundwater chemical/particle sampling and assay • Farm Irrigation Rating Index (FIRI)

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Water Quality - Excessive Salinity in Groundwater	Pollution from salts such as Ca, Mg, Na, K, HCO ₃ , CO ₃ , Cl, Se, and SO ₄ degrades groundwater quality.	Salts are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Salts reaching the groundwater aquifer of concern are minimized as a result of irrigation system design and management, and other farm management techniques (i.e. plant selection, and tillage and grazing practices). Irrigation water will be managed according to standards for Irrigation Water Management (449) and guidelines for leaching contained in the Utah Irrigation Guide. Groundwater return flows meet the classified use of the water body receiving the water.	<ul style="list-style-type: none"> • Vadose zone and groundwater salinity sampling (total dissolved solids [TDS] or electrical conductivity) and assay • Utah Irrigation Guide • National Engineering Handbook, Part 652, Irrigation Guide • Soil salinity sampling and assay • Farm Irrigation Rating Index (FIRI) • Salt Primer
Water Quality - Harmful Levels of Heavy Metals in Groundwater	Natural or human induced metal pollutants present in toxic amounts degrade groundwater quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Materials containing heavy metals are applied at rates and times such that federal, state, and local water quality standards for the intended use of the water are achieved. Technical assistance will be in accordance with standards and specifications for Nutrient Management (590), and Waste Utilization (633). Irrigation water will be managed according to standards for Irrigation Water Management (449) such that groundwater uses are not adversely affected.	<ul style="list-style-type: none"> • Vadose zone and groundwater chemical sampling and assay • Farm Irrigation Rating Index (FIRI)

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WATER				
Water Quality - Harmful Levels of Pathogens in Groundwater	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades groundwater quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Materials containing pathogens are applied at rates and times such that federal, state, and local water quality standards for the intended use of the water are achieved. Technical assistance will be in accordance with standards and specifications for Nutrient Management (590), and Waste Utilization (633). Irrigation water will be managed according to standards for Irrigation Water Management (449) such that groundwater uses are not adversely affected.	<ul style="list-style-type: none"> • Vadose zone and groundwater chemical sampling and assay • Farm Irrigation Rating Index (FIRI)
Water Quality - Harmful Levels of Petroleum in Groundwater	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade groundwater quality.	Petroleum products are used, stored, handled, disposed of, and managed such that groundwater uses are not adversely affected.	Petroleum products are used, stored, handled, disposed of, and managed such that groundwater uses are not adversely affected.	<ul style="list-style-type: none"> • Vadose zone and groundwater chemical sampling and assay
Water Quality - Harmful Levels of Pesticides in Surface Water	Pest control chemicals present in toxic amounts degrade surface water quality.	Pesticides are applied, stored, handled, disposed of, and managed such that surface water uses are not adversely affected.	Pesticides are applied, stored, handled, disposed of, and managed such that surface water uses are not adversely affected. Technical assistance will be in accordance with standards and specifications for Irrigation Water Management (449) and Pest Management (595).	<ul style="list-style-type: none"> • WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) • NAPRA (National Agricultural Pesticide Risk Analysis – USDA/NRCS) • Surface water chemical sampling assay • Farm*A*Syst • Farm Irrigation Rating Index (FIRI)

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Water Quality - Excessive Nutrients and Organics in Surface Water	Pollution from natural or human induced nutrients such as N, P, and organics (Including animal and other wastes) degrades surface water quality.	Nutrients and organics are stored, handled, disposed of, and managed such that surface water uses are not adversely affected.	Nutrients and organics are stored, handled, disposed of, and managed such that surface water uses are not adversely affected. Technical assistance will be in accordance with standards and specifications for Irrigation Water Management (449), Nutrient Management (590) and Waste Utilization (633).	<ul style="list-style-type: none"> Utah Manure Application Risk Index National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook Surface water chemical/particle sampling and assay Farm Irrigation Rating Index (FIRI)
Water Quality - Excessive Suspended Sediment and Turbidity in Surface Water	Pollution from mineral or organic particles degrades surface water quality.	Movement of mineral and organic particles is managed such that surface water uses are not adversely affected.	Movement of mineral and organic particles is managed such that surface water uses are not adversely affected.	<ul style="list-style-type: none"> Visual assessment & client interview Water Quality Indicators Guide – Surface Waters, Field Sheets IA and 1B (Terrene Institute ©1996) Surface water chemical/particle sampling and assay
Water Quality - Excessive Salinity in Surface Water	Pollution from salts such as Ca, Mg, Na, K, HCO ₃ , CO ₃ , Cl, Se, and SO ₄ degrades surface water quality.	Salts are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Planning area does not contribute salts to water bodies of concern at levels that will adversely impact water quality. Irrigation water will be managed according to standards for Irrigation Water Management (449).	<ul style="list-style-type: none"> Utah 303d List Surface water chemical/particle sampling and assay Farm Irrigation Rating Index (FIRI) Salt Primer

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Water Quality - Harmful Levels of Heavy Metals in Surface Water	Natural or human induced metal pollutants are present in toxic amounts that degrade surface water quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Planned area does not contribute to heavy metal contamination of surface water bodies above federal, state, or local standards for the intended use of the water. Technical assistance will be in accordance with standards and specifications for Irrigation Water Management (449), Nutrient Management (590) and Waste Utilization (633).	<ul style="list-style-type: none"> • Surface water chemical sampling and assay • Utah 303d List • Farm Irrigation Rating Index (FIRI)
Water Quality - Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality.	Use and management of land and water are coordinated to minimize impacts on surface water temperatures.	Water temperature should be suitable for the intended use. Application of conservation practices will minimize the potential for temperature related problems. Shade or plant canopy on streambanks and other riparian restoration techniques will be considered.	<ul style="list-style-type: none"> • Stream Visual Assessment Protocol - SVAP • Surface water temperature sampling and assay • Utah 303d List
Water Quality - Harmful Levels of Pathogens in Surface Water	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades surface water quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Planned area does not contribute to pathogen contamination of surface water bodies above federal, state, or local standards for the intended use of the water. Technical assistance will be in accordance with standards and specifications for Irrigation Water Management (449), Nutrient Management (590) and Waste Utilization (633).	<ul style="list-style-type: none"> • Surface water pathogen sampling and assay • Utah 303d List • Farm Irrigation Rating Index (FIRI)
Water Quality - Harmful Levels of Petroleum in Surface Water	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade surface water quality.	Petroleum products are used, stored, handled, and disposed of such that groundwater uses are not adversely affected.	Petroleum products are used, stored, handled, and disposed of such that groundwater uses are not adversely affected.	<ul style="list-style-type: none"> • Surface water chemical sampling and assay • Utah 303d List

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AIR				
Air Quality - Particulate matter less than 10 micrometers in diameter (PM 10)	Particulate matter less than 10 micrometers in diameter are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations comply with PM 10 requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with PM 10 requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> • Specific guidelines contained in State or Federal Implementation Plan; or other approved NRCS tools. • Air quality analysis
Air Quality - Particulate matter less than 2.5 micrometers in diameter (PM 2.5)	Particulate matter less than 2.5 micrometers in diameter are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations comply with PM 2.5 requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with PM 2.5 requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> • Specific guidelines contained in State or Federal Implementation Plan; or other approved NRCS tools • Air quality analysis
Air Quality - Excessive Ozone	High concentrations of ozone (O ₃) are adversely affecting human health, reducing plant yields, and leading to the creation of smog.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> • Specific guidelines contained in State or Federal Implementation Plan; or other approved NRCS tools • Air quality analysis
Air Quality - Excessive Greenhouse Gas – CO₂ (carbon dioxide)	Increased CO ₂ concentrations are adversely affecting ecosystem processes.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> • Model simulations (Century, EPIC, CQUESTER); sampling for soil carbon or International Panel on Climate Change methodology; or other NRCS approved tools

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Air Quality - Excessive Greenhouse Gas – N₂O (nitrous oxide)	Increased N ₂ O concentrations are adversely affecting ecosystem processes.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> Model simulations (NLEAP or DayCENT), or IPCC methodology; or other NRCS approved tools Air quality analysis
Air Quality - Excessive Greenhouse Gas – CH₄ (methane)	Increased CH ₄ concentrations are adversely affecting ecosystem processes. .	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> IPCC methodology; or other NRCS approved tools Air quality analysis
Air Quality - Ammonia (NH₃)	Animal waste and inorganic commercial fertilizers emit ammonia that contributes to odor, is a PM _{2.5} precursor, and contributes to acid rain.	Land use and management operations comply with requirements of all applicable Federal, Tribal, State, and Local regulations.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	<ul style="list-style-type: none"> Approved NRCS technical guidance and tools Air quality analysis
Air Quality - Chemical Drift	Materials applied for pest control drift downwind and contaminate/injure non-targeted fields, crops, soils, water, animals and humans.	Land use and management operations comply with all applicable Federal, Tribal, State, and Local regulations, and applicable label directions.	Land use and management operations comply with all applicable Federal, Tribal, State, and Local regulations, and applicable label directions.	<ul style="list-style-type: none"> Approved NRCS technical guidance and tools
Air Quality - Objectionable Odors	Land use and management operations produce offensive smells.	Odor-producing facilities and activities are planned and sited to mitigate potential nuisance impacts and meets all applicable Tribal, State, and Local regulations.	Odor-producing facilities and activities are planned and sited to mitigate potential nuisance impacts and meets all applicable Tribal, State, and Local regulations.	<ul style="list-style-type: none"> Olfactory assessment Agricultural Waste Management Field Handbook (AWMFH) NRCS approved tools

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Air Quality - Reduced Visibility	Sight distance is impaired due to airborne particles causing unsafe conditions and impeded viewing of natural vistas especially in Class I viewing areas (primarily national parks and monuments).	Land use and management operations comply with all applicable Federal, Tribal, State, and Local regulations including state and local smoke and/or burn management plans.	Land use and management operations comply with all applicable Federal, Tribal, State, and Local regulations including state and local smoke and/or burn management plans.	<ul style="list-style-type: none"> • Visual assessment • Utah Wind Erosion Equation (WEQ) Handbook Jan 98 • Utah WEQ Excel Spreadsheet • Regional air partnership recommendations and/or state guidance for smoke management
Air Quality - Undesirable Air Movement	Wind velocities (too little or too much) reduce animal or plant productivity, impact human comfort and increase energy consumption.	Devices and practices are sited and planned to mitigate excess or deficient air movement.	Devices and practices are sited and planned to mitigate excess or deficient air movement.	<ul style="list-style-type: none"> • Visual assessment • Anemometers • Approved NRCS technical guidance and tools
Air Quality - Adverse Air Temperature	Air temperatures (too cold or too hot) reduce animal or plant productivity, impact human comfort and increase energy consumption.	Devices and practices are planned and sited to mitigate temperature extremes.	Devices and practices are planned and sited to mitigate temperature extremes.	<ul style="list-style-type: none"> • Chill factor indices; heat indices • Air temperature assessment

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
PLANTS				
Plants not adapted or suited	Plants are not adapted and/or suited to site conditions or client objectives.	<p>Selected plants are adapted to the soil and climatic conditions or the site is modified to make it suitable for the desired plants. Plants are sustainable, do not negatively impact other resources, and meet client objectives. For specific land uses, additional criteria apply:</p> <p>Cropland: A healthy stand with vigorous growth. Yields 75% of client expectations.</p> <p>Rangeland: Plants on or planned for the site are listed in applicable Ecological Site Descriptions (ESD)</p> <p>Pastureland: Plants on or planned for the site have a site adaptation score greater than 3 using Pasture Condition Scoring (PCS) and are listed in applicable Forage Suitability Groups (FSG) reports.</p> <p>Hayland: Plants on or planned for the site are listed in applicable Forage Suitability Groups (FSG) reports.</p> <p>Forestland/Agroforest: Plants on or planned for the site are listed in Ecological Site Descriptions (ESD)</p>	Only species adapted to the site will be seeded. If plant species are not suitable for their intended use, either management operations will be modified to favor the desirable species or plant species that are better suited for the intended use will be selected and established.	<ul style="list-style-type: none"> • On-site investigation and records • Forage Suitability Groups (FSG) • Pasture Condition Scoring (PCS) • Client interview • PLANTS database • Intermountain Planting Guide • Plant hardiness zone map • Soil pH, drainage class, sodium adsorption ratio (SAR) and electrical conductivity (EC) suitability ranges. • University Extension Service information • Soil survey manuscripts • Ecological Site Descriptions (ESD) • UT-ECS-2 worksheet • NRCS Discipline Manuals/handbooks

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
PLANTS				
Plant – Condition – Productivity, Health and Vigor	Plants do not produce the yields, quality, and soil cover to meet client objectives.	<p>Selected plants on or planned for the site are sufficiently productive to meet or exceed client needs. For specific land uses, additional criteria apply:</p> <p>Cropland: A healthy stand with vigorous growth produces at least 75% of site potential.</p> <p>Rangeland: The plant community has a similarity index of at least 60% or an upward trend for similarity indices less than 60%.</p> <p>Pastureland: Forage yields are at least 75% of high management estimates cited in FSG reports.</p> <p>Hayland: Forage yields at least 75% of high mgt. estimates cited in Forage Suitability Groups (FSG) reports</p> <p>Forestland/Agroforest: Forests consist of healthy stands with vigorous growth having a stand density within 25% of optimum stocking on a stems/acre basis. Plants chosen for agroforest applications are consistent with Conservation Tree and Shrub Groups (CTSG) listings and height performance.</p>	<p>Cropland: Production levels are 75 percent or more of potential for the site on which being grown. Production levels should be representative of the producers yield goals. Record keeping will be encouraged unless required by programs.</p> <p>Pastureland, Hayland, and Seeded Rangeland: Management species constitute 75 percent or more of total production and productivity of management species reflect 75 percent or more of potential for the site on which being grown.</p> <p>Native Rangeland: The plant community has a similarity index of at least 60% or an upward trend for similarity indices less than 60%.</p> <p>Forestland: Forests consist of healthy stands with vigorous growth having a stand density within 25% of optimum stocking on a stems/acre basis.</p>	<ul style="list-style-type: none"> • Visual assessment & client interview • NRCS discipline manuals/handbooks • Ecological Site Descriptions • Rising plate meter • Forage Suitability Groups (FSG) • Clip and weigh sampling procedure. • Soil survey manuscripts • Soil Testing • Crop/soil yield comparison in the vicinity • Pasture Condition Scoring • Keys for disease and insect symptoms • Keys for nutrient deficiencies, toxicities, and other conditions • UT-ECS-2 worksheet • Rangeland Health Evaluation Worksheet • Stocking rate of desired species • Stand density measurements for trees

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
PLANTS				
Plant Condition - Threatened or Endangered Plant Species	Plant populations and /or habitat quantity and quality have reached a level that one or more plant species are in danger of or threatened with extinction.	Threatened and endangered plant species and/or habitats they occupy are managed to avoid actions that would reduce their current population, health, or sustainability.	Threatened and endangered plant species and/or habitats they occupy are managed to avoid actions that would reduce their current population, health, or sustainability.	<ul style="list-style-type: none"> • Visual assessment & client interviews • Site Inventory • General Manual, 190, Part 410 • US Fish and Wildlife Service county endangered species lists • Federal endangered species rules and regulations • Consultation with appropriate federal agencies • PLANTS Website
Plant Condition - Noxious and Invasive Plants	The site has noxious or invasive plants present.	The site is managed to control noxious and invasive plants and to minimize their spread.	The site is managed to control noxious and invasive plants and to minimize their spread. Noxious weeds are controlled according to Utah noxious weed laws.	<ul style="list-style-type: none"> • Visual assessment & client interviews • Site Inventory • Consult weed management association • Consultation with appropriate federal, state, and local agencies/groups • Utah Noxious Weed Control Act • PLANTS Website • UT-ECS-2 worksheet • Rangeland Health Evaluation Worksheet
Plant Condition - Forage Quality and Palatability	Plants do not have adequate nutritive value or palatability for the intended use	Forage plants are managed to produce the desired nutritive value and palatability for the intended use.	Forage plants are managed to produce the desired nutritive value and palatability for the intended use.	<ul style="list-style-type: none"> • NIRS Forage Quality Analysis & NUTBAL • Plant tissue analysis • Body Condition Scoring

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
PLANTS				
Plant Condition – Wildfire Hazard	The kinds and amounts of fuel loadings (plant biomass) pose risks to human safety, structures, and resources should wildfire occur.	Fuel loadings are reduced and/or isolated to meet client needs in minimizing the risk and incidence of wildfire.	Fuel loadings are reduced and/or isolated to meet client needs in minimizing the risk and incidence of wildfire.	<ul style="list-style-type: none"> • Visual assessment protocols • Site and flammable biomass inventories • Aerial photo analysis

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
ANIMALS				
Fish and Wildlife - Inadequate Food	Quantity and quality of food is unavailable to meet the life history requirements of the species or guild of species of concern	Food availability meets the life history requirements of the species or guild of species of concern.	Food availability meets the life history requirements of the species or guild of species of concern.	<ul style="list-style-type: none"> • Visual assessment • Inventory of food species • Aerial photo analysis • Wildlife Habitat Suitability Index (USFWS) • National Biology Handbook
Fish and Wildlife – Inadequate Cover/Shelter	Cover/shelter for the species of concern is unavailable or inadequate. For aquatic species, this includes lack of hiding, thermal, and/or refuge cover	The ecosystem or habit types support the necessary plant species in the kinds, amounts, and physical structure; and the connectivity of fish and wildlife cover is adequate to support, over time, the species of concern.	The ecosystem or habit types support the necessary plant species in the kinds, amounts, and physical structure; and the connectivity of fish and wildlife cover is adequate to support, over time, the species of concern.	<ul style="list-style-type: none"> • Visual assessment • Inventory of cover/shelter • Aerial photo analysis • Wildlife Habitat Suitability Index (USFWS) • National Biology Handbook
Fish and Wildlife – Inadequate Water	The quantity and quality of water is unacceptable for the species of concern	The quantity and quality of water meets the life history requirements of the species of concern.	The quantity and quality of water meets the life history requirements of the species of concern.	<ul style="list-style-type: none"> • Surface water dissolved oxygen sampling and assay • Stream Visual Assessment Protocol (SVAP) • Habitat Suitability Index - model for target species • Inventory of water supplies • Aerial photo analysis • National Biology Handbook
Fish and Wildlife – Inadequate Space	Lack of area and fragmentation of areas disrupt life history requirements of the species of concern	Adequate area and connectivity of areas meet life history requirements of the species of concern. (Examples: staging areas for rest and feeding, lekking areas for breeding, migratory movement corridors)	Adequate area and connectivity of areas meet life history requirements of the species of concern. (Examples: staging areas for rest and feeding, lekking areas for breeding, migratory movement corridors)	<ul style="list-style-type: none"> • Visual assessment • Stream Visual Assessment Protocol (SVAP) • Inventory of space/areas • Aerial photo analysis • Wildlife Habitat Suitability Index (USFWS) • National Biology Handbook

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
ANIMALS				
Fish and Wildlife -Plant Community Fragmentation	Natural plant communities have insufficient structure, extent, and connectivity to provide ecological functions and/or achieve management objectives.	Fish and wildlife habitat functions of connected plant communities are maintained sufficiently to support the species or guild of species of concern.	Fish and wildlife habitat functions of connected plant communities are maintained sufficiently to support the species or guild of species of concern.	<ul style="list-style-type: none"> Stream Visual Assessment Protocol Aquatic and terrestrial habitat evaluation procedures Wildlife Habitat Evaluation Guide (WHEG)
Fish and Wildlife - Imbalance Among and Within Populations	Populations are not in proportion to available quantities and qualities of food (plants, predator/prey), cover/shelter, water, and space and other life history requirements.	Land and water use and management are consistent with direct population management activities conducted by fish and wildlife agencies.	Land and water use and management are consistent with direct population management activities conducted by state and federal fish and wildlife agencies.	<ul style="list-style-type: none"> Fish and wildlife agency guidance and protocols
Fish and Wildlife - Threatened and Endangered Species	Fish and wildlife populations and/or habitat quantity and quality have reached a level that one or more species are in danger of or threatened with extinction.	Threatened and endangered fish and wildlife species and/or habitats they occupy are managed to avoid actions that would reduce their current population, health, or sustainability.	Threatened and endangered fish and wildlife species and/or habitats they occupy are managed to avoid actions that would reduce their current population, health, or sustainability.	<ul style="list-style-type: none"> Client interviews Inventory of presence/absence of T&E species General Manual, 190, Part 410 US Fish and Wildlife Service county endangered species lists Fish and wildlife recovery plans Federal endangered species rules and regulations Consultation with appropriate federal agencies

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	Description of Concern	National Quality Criteria	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
ANIMALS				
Domestic Animals – Inadequate Quantities and Quality of Feed and Forage	Total feed and forage is insufficient to meet the nutritional and production needs of the kinds and classes of livestock	Feed and forage including supplemental nutritional requirements are provided to meet production goals for the kinds and classes of livestock. Native grazers are factored into the total feed and forage balance computations.	Feed and forage including supplemental nutritional requirements are provided to meet production goals for the kinds and classes of livestock. Native grazers are factored into the total feed and forage balance computations.	<ul style="list-style-type: none"> • Measured inventory • National Range and Pasture Handbook • Grazing Lands Application (GLA) software • NIRS Forage Quality Analysis & NUTBAL • Other State adapted forage/livestock management software and job sheets
Domestic Animals – Inadequate Shelter	Livestock are not protected sufficiently to meet the production goals for the kinds and classes of livestock	Artificial and/or natural shelter is provided to meet production goals for the kinds and classes of livestock.	Adequate protective shelter requirements are met to ensure that the health and general well being of the animal is maintained.	<ul style="list-style-type: none"> • Visual assessment • Inventory of facilities and their capacities • Aerial photo analysis • National Range and Pasture Handbook
Domestic Animals – Inadequate Stock Water	The quantity, quality and distribution of drinking water is insufficient to meet the production goals for the kinds and classes of livestock	Sufficient water of acceptable quality is provided and adequately distributed to meet production goals for the kinds and classes of livestock. To reduce potential for water contamination, watering facilities are constructed or modified to minimize mortality to indigenous wildlife.	Adequate quantities of water, of acceptable quality and distribution, are available at all times to meet animal needs.	<ul style="list-style-type: none"> • Visual assessment • Inventory of facilities and their capacities • Aerial photo analysis • National Range and Pasture Handbook
Domestic Animals - Stress and Mortality	Animals exhibit illness or death from disease, parasites, insects, poisonous plants, or other factors	Land and water use and management are consistent with activities conducted to alleviate stress and mortality factors.	Land and water use and management are consistent with activities conducted to alleviate stress and mortality factors.	<ul style="list-style-type: none"> • Animal health/mortality alerts • State and local biosecurity protocols • State and local standards for animal disposal